Hartford Working Group
Hartford, Illinois

Modified Interim Measures Work Plan

Hartford Area Hydrocarbon Plume Site, Hartford, Illinois

Prepared for:

U.S. Environmental Protection Agency

Prepared by:

ENSR Corporation
June 2004
Document Number 01005-093-101

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June 25, 2004

Mr. Steve Faryan
U.S. Environmental Protection Agency
77 W. Jackson Blvd, Mailcode SE-5J
Chicago, IL 60604

Mr. Kevin Turner
U.S. Environmental Protection Agency
8588 Route 148
Marion, IL 62959

RE: Modified Interim Measures Work Plan
Hartford Area Hydrocarbon Plume Site, Hartford, Illinois
ENSR Project Number 01005-093-101

Dear Sirs:
Enclosed are two copies of the Modified Interim Measures Work Plan for Hartford, Illinois. ENSR Corporation prepared this report on behalf of the Hartford Working Group (HWG).

ENSR and the Hartford Working Group have been working to address comments in the U.S. Environmental Protection Agency's May 26, 2004 letter to the HWG representatives. This modified work plan describes the actions planned to offer and implement the sealing of building foundations to minimize potential vapor intrusion and to install ventilation fans in buildings within a specified area of the site.

Please give us a call at (630) 836-1700 if you have any questions or comments.

Sincerely,

David A. Schumacher, P.G.
Program Manager

Robin Schilling
Project Manager

enclosure: *Modified Interim Measures Work Plan, June 2004, ENSR Project No. 01005-093-101*

cc: T. Binz – Tetra Tech, Inc.
J. Moore/IEPA
C. Cahnovsky/IEPA

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1.0 INTRODUCTION

This Modified Interim Measures Work Plan (Modified IMWP) has been prepared by ENSR Corporation (ENSR), on behalf of the Hartford Working Group (HWG), to address comments in the U.S. Environmental Protection Agency's (U.S. EPA's) May 26, 2004 letter to the HWG representatives. This Modified IMWP describes the actions planned to offer and implement the sealing of building foundations to minimize potential vapor intrusion and to install ventilation fans in buildings within a specified area of the Hartford Area Hydrocarbon Plume Site in Hartford, Illinois (Hartford or the "Site").

Efforts are already underway to implement the actions described in this Modified IMWP.

This Modified IMWP was prepared as a joint effort by the following companies: Atlantic Richfield Company; Premcor Refining Group; and Shell Oil Product US. Representatives of these companies have organized to form the HWG. Preparation of this Modified IMWP is a voluntary effort by the HWG in cooperation with the U.S. EPA, Illinois Environmental Protection Agency (IEPA), and Illinois Department of Public Health (IDPH).

2.0 BACKGROUND

Development of this Modified IMWP is supported by a number of previous activities that have been conducted in Hartford. The activities relevant to this Modified IMWP include the following.

- Approval of the initial Interim Measures Work Plan (ENSR, December 2003a) by the U.S. EPA on December 30, 2003.

- Approval of the Vapor Intrusion Mitigation Pilot Test Work Plan (ENSR, December 2003b) by the U.S. EPA on December 30, 2003.

- Completion of Needs Assessments at 56 locations (to date) and submittal to U.S. EPA of the Needs Assessment Report (ENSR, March 2004).

- Completion of the ROST™ Investigation (Clayton, April 2004) and Clayton Group Service's (Clayton's) subsequent development of the "buffer zone" map (Figure 2-1).

- Pilot testing of sub-slab depressurization systems at two locations and submittal to U.S. EPA of a Draft Pilot Test Report (ENSR, May 2004)

- Completion of the Vapor Migration Pathway Assessment at an initial set of locations and submittal to U.S. EPA of a Draft Initial Vapor Migration Pathway Assessment Report (ENSR, June 2004).

The results of these investigations have been summarized in a number of reports previously submitted to the U.S. EPA (see reference list in Section 6.0).

The area of the Site in which the HWG will offer to seal foundations and install ventilation systems in buildings is defined as the area north of, and including, Hawthorne Street as shown on Figure 2-1. Figure 2-2 presents a decision tree that describes the HWG's process for determining locations where the ventilation systems will be offered.

3.0 INTERIM MEASURES

3.1 Modified Interim Measures Objectives

The objectives of the Modified Interim Measures are to:

- Provide an effective barrier to vapor intrusion through sealing of basement foundations and ventilation;
- Conduct walk-throughs with contractors to identify work that needs to be completed to seal foundations and install ventilation systems; and
- Complete the identified work and monitor the effectiveness of the systems.

3.2 Description of Modified Interim Measures

The following activities have been or will be completed to meet these objectives.

- Letters have been sent to residents in the offer area (See Figure 2-1) offering to complete the foundation sealing and ventilation system installation work. Completion of this activity is contingent upon acceptance of attorneys representing some of the residents in the offer area.
- Walk-throughs will be scheduled with the building residents/owners beginning as early as July 6, 2004.
- Contractors will be with ENSR personnel during walk-throughs to help identify and plan work to be conducted.
- ENSR personnel will prepare a construction take-off for each home and oversee the foundation sealing and ventilation system installation work by the contractors.
- Indoor air monitoring will be conducted following installation to assess the effectiveness of the ventilation systems.

Figure 3-1 presents a process flow chart for how the walk-throughs will be completed. The following sections describe the details of the walk-throughs.

3.3 Offer Letters to Building Owners

Offer letters are being mailed by ENSR, on behalf of the HWG, to addresses defined in the buffer zone area on Figure 2-1. Scheduling of the walk-throughs has begun and they are currently starting on July 6, 2004. A project schedule is provided in Section 5.3.

PM & Associates represents the HWG and is coordinating the scheduling of the walk-throughs with the residents and building owners. The locations currently scheduled for walk-throughs are those that have responded to the initial offer letters. For those locations where owners have not responded, PM & Associates will attempt to contact them by telephone to follow-up on the offer. PM & Associates will also conduct door-to-door follow-up for locations where the owners cannot be reached by telephone. If a resident declines the offer, PM & Associates will attempt to contact the resident and discuss denial procedures. Denial procedures are discussed further in Section 3.11.

3.4 Walk-Throughs

Three representatives of the HWG will conduct the walk-throughs. Two people from ENSR will be present, consisting of a Needs Assessor and a Field Construction Manager, along with a contractor representative that would be conducting the foundation sealing and ventilation system installation. ENSR understands representatives from the U.S. EPA and/or IEPA will also be present.

The Needs Assessor will be responsible for the following.

- Coordinating the walk-through schedule with PM & Associates (PM & Associates will only be contacting those residents not represented by council. ENSR will contact residents that are represented by legal council);
- The walk-through will be scheduled with the agencies with a minimum 3 working day notice. ENSR will contact the agencies and provide them the schedule (all attempts will be made to schedule walk-throughs as far in advance as possible);
- Presenting and reviewing the Access Agreement with the building resident/owner, and obtaining appropriate signatures;
- Conducting the Needs Assessment interview with the building resident/owner and documenting the building construction;
- Monitoring indoor air quality using field instruments and collecting indoor air samples; and
- Preparing final Needs Assessment forms and building construction diagrams.

The Construction Manager will be responsible for the following.

- Detailed inspection of the building foundation and identification of openings where vapors could potentially enter the building.
- Directing the contractor to conduct work that can be immediately implemented to seal vapor entry points;
- Reviewing final building construction diagrams;
- Working with the project field engineers to finalize the construction take-off;

- Overseeing the final completion of the foundation sealing and ventilation system installation; and
- Presenting and reviewing the system operation instructions with the building owner.

3.5 Access Agreements

Appendix A contains an example access agreement that will be presented to the building owners.

3.6 Walk-Through Forms

Appendix B contains the form that will be used to gather and document information collected during the walk-throughs. Hand written field information will be reviewed and re-entered electronically onto the forms. Field sketches of building and foundation layouts will be redrawn to scale electronically in order to prepare the construction take-offs. The Needs Assessor and the Construction Manager personnel conducting the walk-throughs will provide final review and approval of field information based off field sketches.

3.7 Construction Take-Off

ENSR's field engineer will prepare a construction take-off diagram based on the building construction diagram generated by the walk-through team. The take-off will illustrate the following.

- Areas where foundation sealing will occur;
- Locations where floor drains or other potential vapor entry points are sealed;
- Locations for ventilation system equipment installation;
- Locations for fresh air inlets;
- Electrical connections

The construction take-off will be submitted to the U.S. EPA as a technical memorandum that will also include information on the specific ventilation system equipment that has been installed and specific materials that were be used to seal foundations.

3.8 Contractor Oversight

To the extent practicable, the ENSR Construction Manager conducting the walk-through will over see the completion of the work performed by the contractor.

3.9 Operating Instructions

Appendix C contains an example of the instructions that will be provided to and reviewed with the building owner after the foundation sealing is completed and the ventilation systems are installed.

3.10 Effectiveness Monitoring

Indoor air samples will be collected during the walk-through and analyzed utilizing a fixed laboratory grade GC/MS. The GC/MS will be located within the Village of Hartford and operated by a certified GC/MS operator. Real time data will be generated utilizing the equipment. The samples will be collected utilizing SUMMA® canisters and delivered by ENSR personnel to the laboratory. Samples will be analyzed for the following constituents: 1,3-butadiene, hexane, benzene, toluene, ethyl benzene, M & P-xylenes, O-xylenes, 1,2,4-trimethylbenzene, and 1,3,5-trimethylbenzene. In addition, field screening instruments will be utilized to evaluate in home conditions (PID/FID/LEL meter).

Upon completion of mitigation measures, indoor air samples will be collected again and analyzed for the above stated constituents to determine the effectiveness of the mitigation measures. In addition, upon completion of ventilation fans installation, tests will be conducted to insure that fans are not drawing gases from the water heater and/or furnace. A carbon monoxide (CO) analyzer will be utilized to determine this while the ventilation fan is on and off. A direct comparison of the CO readings will determine whether a negative pressure is affecting the migration of vapors and CO into the basement during ventilator operation.

3.11 Denial Letter

Appendix D contains an example denial letter for locations where the offer to conduct the interim measures work is not accepted by the building owner. This will be presented to building owners during the door-to-door follow-up of non-respondents by PM & Associates.

4.0 EQUIPMENT AND MATERIALS

4.1 Foundation Sealing Materials and Procedures

Existing Concrete Floors – Cracks greater than ½-inch wide will be sealed with concrete and finished with an epoxy sealant to cover the repaired area and provide a vapor-proof joint between the existing and new concrete materials. In cases where cracks, separations, or material deterioration has resulted in the concrete flooring having cracks greater than 1-inch, evaluations will be conducted to determine whether the existing concrete should be repaired or replaced.

Concrete floors having cracks less than ½-inch will be sealed with polyurethane caulk. The caulking will be applied with a caulk gun to directly fill the crack and provide a smooth surface finish. The caulking will set rapidly and will be dry within 24 to 48 hours of application.

Where cracks in the concrete are small (between 1 and 2 mm), epoxy may be used to permanently fill the cracks and provide a uniform vapor barrier over the affected area. To ensure that the epoxy gets into and fills the cracks, it will be applied using a trowel and spread evenly to cover the affected area. The epoxy will set rapidly and will be dry within 24 to 48 hours of application.

Unfinished Floors – Concrete may be placed in basements having earthen, unfinished floors. Before concrete installation, soil may have to be removed to prepare the area for concrete. The soil may be covered with a polyethylene vapor barrier, which will be secured to the foundation walls. Areas of unfinished floors, which are temporarily covered with vapor barrier, will be vented to the outside if deemed necessary.

The earthen area will be excavated as necessary to place a 4-inch layer of gravel under the proposed concrete slab. The gravel base will then be placed with a layer of polyethylene over it prior to placing the concrete. The concrete will be placed in the basement by either pumping or by tremie pipe, depending on the size of the basement and equipment access restrictions/logistics.

Concrete Masonry Unit Walls – Concrete block walls will be inspected for cracks and filled with epoxy and/or a water-based latex vapor/waterproof sealant. The epoxy will be applied using a trowel and spread evenly to cover the affected area(s). Following the sealing of the cracks with epoxy and after 24 to 48-hours of curing, the basement walls will be covered with a water-based latex vapor/waterproof sealant.

Field Stone, Brick, and Wood Walls – Mortar joints covering field stone and brick walls will be inspected. Walls requiring repair to seal large cracks and joints in the mortar may be sealed with epoxy and/or re-tuck pointed. A polyethylene vapor barrier may also be installed over the stone, brick,

or wood wall. The vapor barrier will extend from the floor to the ceiling (or outside ground elevation) and will be secured at the top and base by nailing strips or polyurethane adhesive caulking.

Floor Drains, Conduits and Open Pipes – Basements will be inspected for the presence of floor drains, conduits, and open pipes. Floor drains not having a P-trap will be plugged with a rubber drain plug that is sealed in place with caulk. Drains having P-traps will be inspected and filled with water to document their condition and ability to function as an adequate vapor barrier. If leaks are detected or the P-trap does not retain water, the drain will be sealed with a rubber plug and caulked or a check valve will be installed. Electrical conduits and open pipes penetrating the walls and/or floor of the basements will be inspected and sealed with polyethylene caulk.

Maintenance – Sealing and vapor barriers installed on the floors and walls of the basements will be designed to be maintenance free. However, inspections will be conducted every 6 months along with the testing and inspection of the ventilation systems and combustible gas alarms. Should inspections reveal that additional sealing and/or vapor barrier upgrades or repairs are needed, they will be performed as described above.

Appendix E provides MSDS and factory information for the sealing products being used.

4.2 Ventilation Systems

Ventilation fans consisting of direct-drive exhaust fans with movable-blade louvers will be mounted in residences with basement windows. Each ventilation fan unit will be installed by securing it to a wooden frame that is constructed to fit within the window opening. The ventilation fan unit will be secured and sealed within the opening to maximize operational efficiency and prevent movement during operation. As the window openings will vary in size, each ventilation unit will be fitted to maximize the space within the opening and to provide a ventilation rate of 0.5 cubic feet per minute (cfm) to 1.0 cfm per square foot of basement floor area, as suggested in *Ventilation Standards, The Thermal Environment* (Rentschler, YY; pg. 361) for rooms having an area greater than 100 square feet.

Typical ventilation fan units will come equipped with louvers that are gravity operated and open during fan operation. Each unit will have an aluminum frame and fan housing cabinet, steel blades, aluminum louvers, and a wire mesh inlet guard to prevent access to rotating parts. Specifications for typical window-mounted units are as follows:

- Motor - 1/10 hp, 1,000 to 1,500 rpm, open drip-proof, 115 VAC, 60 hz, 2.5 to 4.0 amp, single phase
- Blades – 11- to 14-inch diameter, aluminum
- Operating flow rates – 1,040 to 1,900 cfm @ 0" H_2O static pressure min and 600 to 1,300 cfm @ 0.25" H_2O static pressure max.

- Size range – 15” X 15” X 5-1/8” deep to 20” X 20” X 10” deep.

Ventilation fans will be obtained from McMaster-Carr industrial equipment suppliers, or an equivalent supplier.

In basements with no windows or exterior openings, a direct-drive floor- or -wall mounted blower may be used. The blower will consist of a high volume fume exhauster having an enclosed impeller wheel that is capable of moving large volumes of air at low static pressures. Each blower unit will be installed by securing the blower base to the floor or basement wall to prevent movement during operation and connecting an air duct from the blower discharge through the basement wall. The air discharge duct exiting through the basement wall will be equipped with an exterior vent with damper. The blower inlet will be equipped with a screen to prevent foreign objects from entering and/or damaging the blower system. The blower intake will be placed to maximize cross-ventilation within the basement area. As the basement areas vary in size, each blower unit will be sized to provide a ventilation rate of 0.5 cfm to 1.0 cfm per square foot of basement floor area as suggested in *Ventilation Standards, The Thermal Environment* (Rentschler, YY; pg. 361) for rooms having an area greater than 100 square feet.

Typically, the blower unit will come equipped with motor, mounting base or panel for securing to the floor or wall, aluminum frame and fan housing, and steel impeller wheel. Specifications for typical blower units are as follows:

- Motor – 1/3 to 1/4 hp, 1,725 rpm open drip-proof, 115 VAC, 60 hz, single phase
- Blower inlet and outlet – 4- to 6-inch diameter
- Operating flow rates – 400 to 700 cfm @ 0” static H_2O pressure.
- Unit size – 16” x 16”.

Blower units will be obtained from McMaster-Carr industrial equipment suppliers, or an equivalent supplier.

A sub-slab ventilation system will be installed at residences where it is deemed necessary and/or where a vent fan is not adequately working. The system will consist of PVC piping which penetrates the floor of the basement into a gravel void space below the slab. The piping will then run through an opening in the basement wall to a moisture separator with heat tape and a regenerative blower. Specifications for the typical blower units are as follows:

- Motor – 1/4 to 1/3 hp, 115 VAC, 60 hz, single phase
- Operating flow rates – 15 to 20 scfm @ 5” H_2O pressure.
- Class 1, Division 1 hazardous rating

Regenerative blowers will be manufactured by Rotron, or an approved equal.

4.3 Water Pipes and Heating/Cooling System Ducts

Operation of the ventilation systems will have an effect on the air temperature and humidity within the basement areas. To prevent condensation from forming on interior water pipes in the basement area during times of warm weather operation and to prevent pipes from freezing during times of cold weather operation, water pipes will be fitted with elastomer foam rubber pipe insulation. The insulation is water resistant, flexible, and has a pressure sensitive adhesive strip for easy installation around existing pipes. The insulation can be ordered in lengths of 6 feet and sized for pipes ranging from 3/8-inch to 4-inches in diameter.

During operation of the ventilation units, heating & cooling system ducts within the basement area will be sealed off by closing the duct vent and securing plastic sheeting around the vent. Forced air heating and cooling systems that obtain makeup air from within the basement will require installation of a fresh air duct and damper to the exterior of the building.

4.4 Fresh Air Intakes

Each basement equipped with a ventilation fan or blower unit will also have a fresh air intake installed. The fresh air intake will consist of an opening that allows outside ambient air to enter into the basement during fan or blower operation. The fresh air intake will be sized to allow for 100% of the airflow produced by the fan blower to enter through the opening. At locations where windows or exterior openings are present, a movable-blade wall louver will be installed within the opening. Each louver assembly will be equipped with aluminum blades and frame with flanges for securing to a wooden framed opening within the window. The fresh air intakes will be placed in a separate window and as far from the fan as possible to maximize airflow through the basement area. Each louver will be equipped with a fiberglass insect screen to prevent insects from entering into the basement during periods of fan operation. The louvers are gravity operated and open automatically when air flows across the blades during periods of fan operation.

At locations where windows or exterior openings are not present, a basement wall penetration will be made to install an air inlet duct. Each air inlet duct will be equipped with a screened vent and damper and will range in size from 4-inches to 6-inches in diameter. One to two inlet ducts will be installed to allow for 100% of the airflow produced by the blower to enter through the duct and will be positioned across from the blower location to maximize airflow throughout the basement area.

4.5 Electrical Connections

The ventilation units will be directly hardwired to the buildings main load center in accordance with local electrical code. In buildings where the main load center is not located in the basement area, the blowers may be wired to the nearest outlet or electrical junction box that has sufficient circuit capacity and wire size to operate the ventilation fans. Each system will have a switch located at the blower motor for the building owner to operate the system when needed. A certified electrician will make electrical connections and a mechanical contractor will install the fan and blower units.

4.6 Ventilation System Maintenance

The ventilation units are relatively maintenance free and will require only periodic checks to assure that the intakes are free from obstructions and dirt/dust buildup. Routine cleaning of each unit will be required on an as-needed basis and will depend on the frequency and duration of use.

4.7 Combustible Gas Alarms

A combustible gas alarm will be used for continuous monitoring of potential explosive atmospheric conditions in buildings. One alarm will be mounted on the basement wall nearest the location where the highest documented PID/FID readings have been observed. The alarm will be centered between the ceiling and the floor to assure detection of petroleum constituents and methane. The combustible gas alarm will be equipped with audible (88 dB at 10 feet) and visual alarms that activate when concentrations reach 10% of the lower explosive limit (LEL). Special calibration of the alarms will be performed at the factory to set the alarm level to 10% LEL.

A typical alarm that will be used is a Macurco Model GD-21. Manufacturers' information is provided in Appendix F. The GD-21 is a 120 VAC plug-in type unit with a self-contained alarm and is 4-1/2 inches by 3-1/4 inches in size. Each unit will detect gasoline vapors and methane and will cover an average area of 900 sq. ft. This coverage area may decrease if air movement within the room is stagnant. The unit is equipped with a trouble signal to indicate if problems in the gas-sensing element are present. The GD-21 does not require regular maintenance and uses a self-purging semi-conductor sensor that has a 7 to 10 year life expectancy. If maintenance is required on the unit, servicing will be done at the factory and a new unit will be installed in its place.

Operation of the alarms is indicated by a continuous glowing green light that appears when the unit is powered on and after the unit goes through a two-minute warm-up period. Thereafter, the unit can be tested periodically with butane. Testing is recommended for every 6 months of operation. During alarm conditions, the units' buzzer will sound along with a red light indicator appearing on the unit. The alarm will continue to sound until the air is cleared and the unit reset manually.

5.0 PROJECT MANAGEMENT

5.1 Project Organization

ENSR Corporation has prepared this Modified IMWP on behalf of the HWG. Figure 5-1 presents a project organization chart.

Implementation of the Modified IMWP will be conducted by ENSR Corporation in conjunction with the HWG's public affairs firm, PM & Associates. ENSR's focus will be to implement the technical aspects of the interim measures, while PM & Associates will take the lead in coordinating activities with the building owners.

5.2 Community Relations

The walk-throughs will be coordinated with the building owners through PM & Associates. Coordination and communication with the public includes:

- Mailing of letters to the building owners offering foundation sealing and installation of ventilation systems;
- Fielding telephone calls (directed to PM & Associates) from building owners to schedule walk-throughs and/or to answer questions they may have;
- Follow-up telephone and door-to-door contact with the building owners;
- Participating in the U.S. EPA's availability sessions; and
- Sending a follow-up letter (ENSR) to building owners documenting the work that was completed.

5.3 Project Schedule

Figure 5-2 presents a proposed schedule for implementing the Modified IMWP. This schedule assumes that the U.S. EPA will approve this Modified IMWP by July 6, 2004. The schedule also considers the following.

- The possibility of two field teams completing the walk-throughs. These teams could potentially work on a staggered shift if work needs to be completed in the evenings.
- Holding a "Lessons Learned" meeting with the Agencies approximately 2 weeks after the start of the walk-throughs to review and discuss the progress.

6.0 REFERENCES

Clayton, April 2004. FPH CPT/ROST™ Subsurface Investigation Report and FPH Monitoring Well and Soil Sampling Plan for the Village of Hartford, Illinois. Prepared for the Hartford Working Group. Clayton Project No. 15-03095.14.003.

ENSR, December 2003a. Interim Measures Work Plan, Hartford, Illinois. Prepared for the Hartford Working Group. ENSR Document No. 01005-093-100

ENSR, December 2003b. Vapor Intrusion Mitigation Pilot Test Work Plan, Hartford, Illinois. Prepared for the Hartford Working Group. ENSR Document No. 01005-093-200.

ENSR, March 2004. DRAFT - Needs Assessment Results, Hartford, Illinois. Prepared for the Hartford Working Group. ENSR Document No. 01005-093-300

ENSR, May 2004. DRAFT - Vapor Mitigation System Pilot Test Report. Prepared for the Hartford Working Group. ENSR Document No. 01005-093-210.

ENSR, June 2004. DRAFT - Initial Vapor Migration Pathway Assessment Report. Prepared for the Hartford Working Group. ENSR Document No. 01005-093-350.

FIGURES

MITIGATION MEASURES OFFER AREA

4–10 FT. BGS

10–20 FT. BGS

20–25 FT. BGS

25–30 FT. BGS

30+ FT. BGS

BGS = BELOW GROUND SURFACE

LEGEND:

- CPT/ROST™ INVESTIGATION LOCATION NO APPARENT PETROLEUM HYDROCARBON (BLACK)
- CPT/ROST™ INVESTIGATION LOCATION LIGHTER–RANGE PETROLEUM HYDROCARBON (BLUE)
- CPT/ROST™ INVESTIGATION LOCATION MID–RANGE PETROLEUM HYDROCARBON (GREEN)
- CPT/ROST™ INVESTIGATION LOCATION HEAVY–RANGE PETROLEUM HYDROCARBON (YELLOW)
- EXISTING MONITORING WELL
- RECOVERY WELL
- SENTINEL MONITORING WELLS
- 15 DEPTH IN FEET TO RESIDUAL HYDROCARBON

NOTES:

1. THE FOLLOWING HROST LOCATIONS 9, 18, 21, 32, 42, 46, 58, 59, 60, 63, 64, 71, 73, AND 75 WERE NOT COMPLETED DUE TO ACCESSIBILITY OR THE FACT THAT THE LOCATION WAS NOT DEEMED NECESSARY BASED ON NEARBY RESULTS.

SCALE IN FEET: 0 125 250 500

CHECK BY	KDC
DRAWN BY	BCP
DATE	6–25–04
SCALE	AS SHOWN
CAD NO.	0309507X5
PRJ NO.	15–03095

INFERRED DEPTH TO FIRST ENCOUNTERED RESIDUAL HYDROCARBON
(WORK IN PROGRESS – WILL BE UPDATED AS NEW DATA BECOMES AVAILABLE)
VILLAGE OF HARTFORD, IL

THE HARTFORD WORKING GROUP
HARTFORD, ILLINOIS

Clayton® GROUP SERVICES

FIGURE 2–1

Figure 2-2

Interim Measures Decision Tree

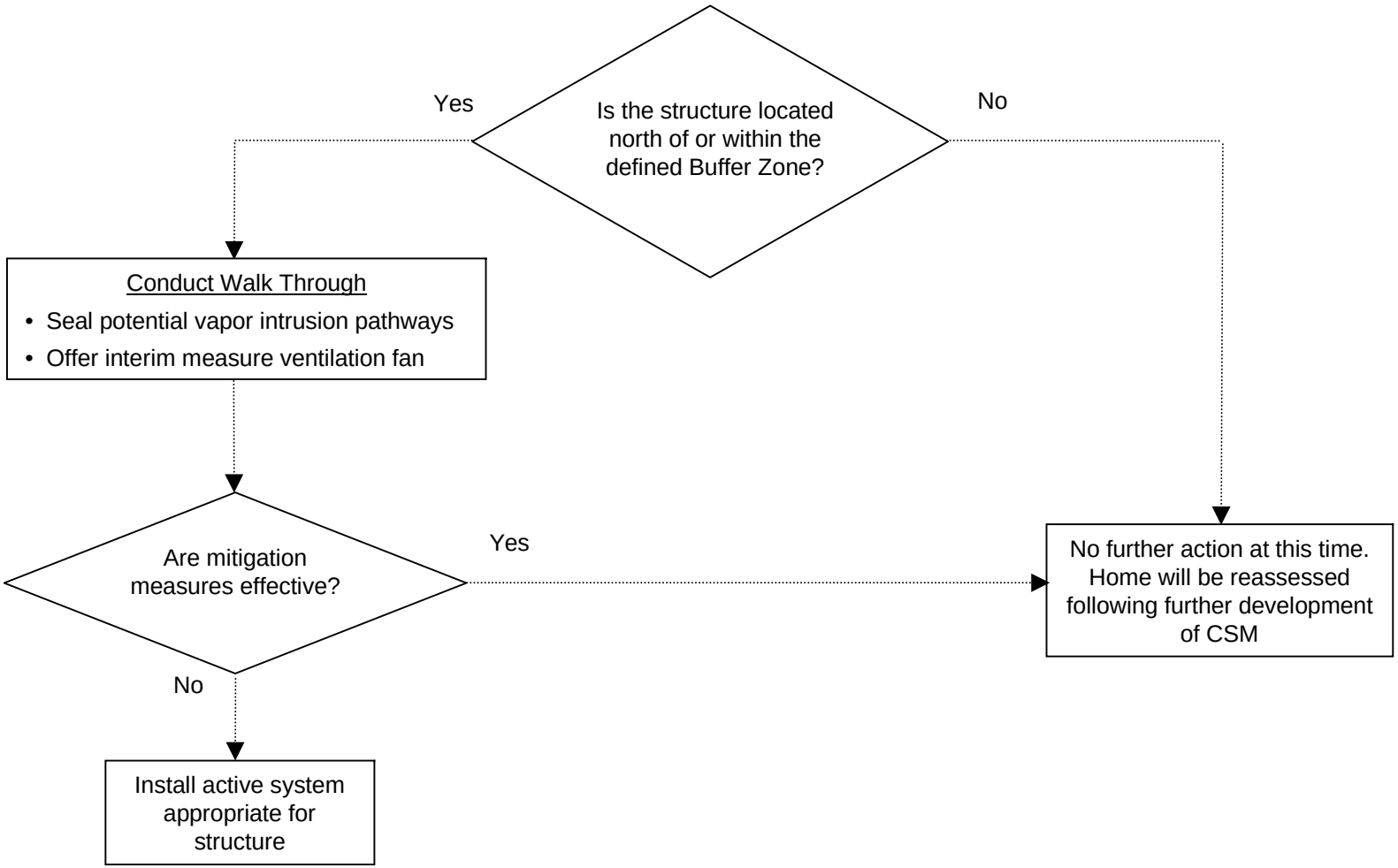


Figure 3-1

Walk-Through Process Flow Chart

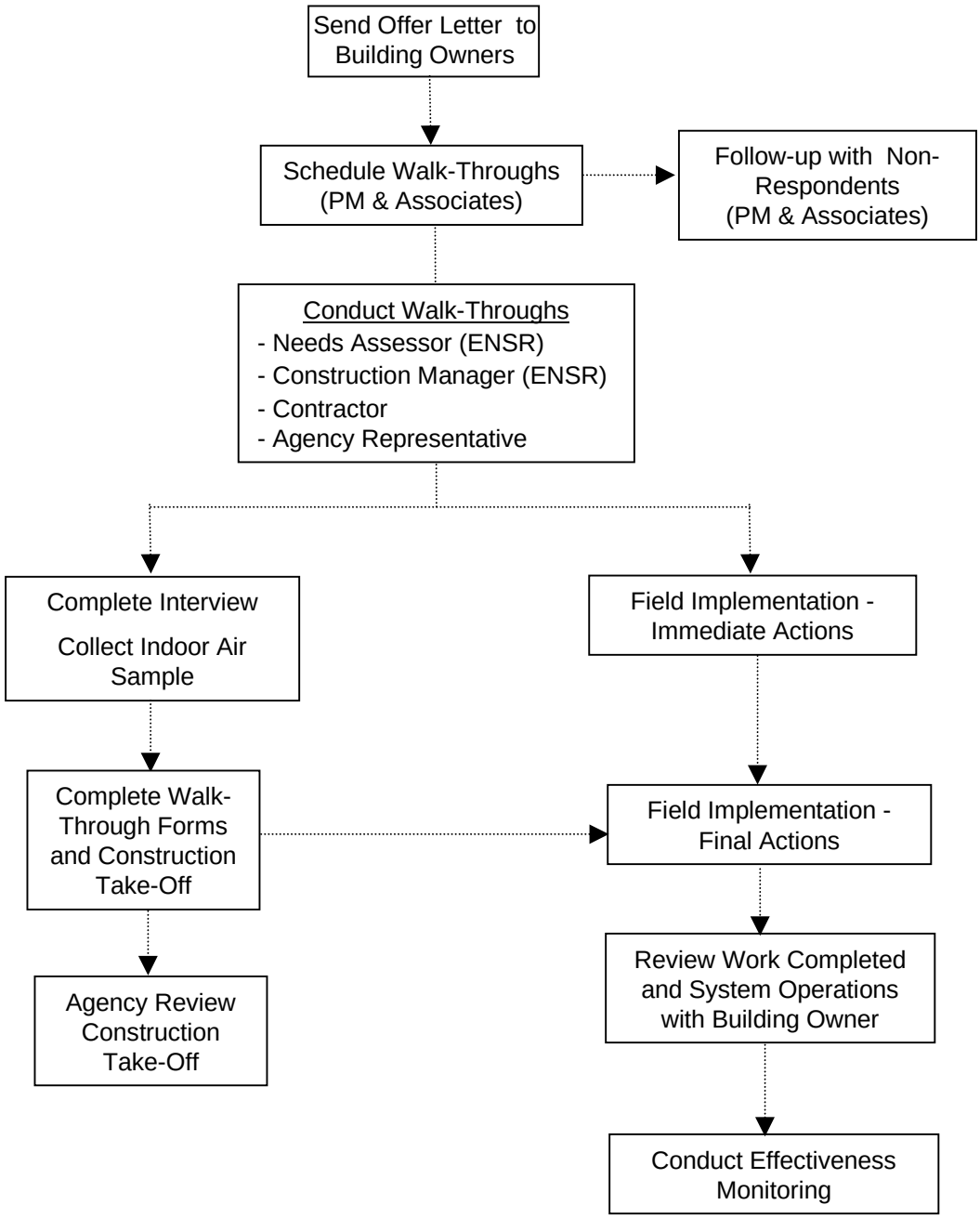
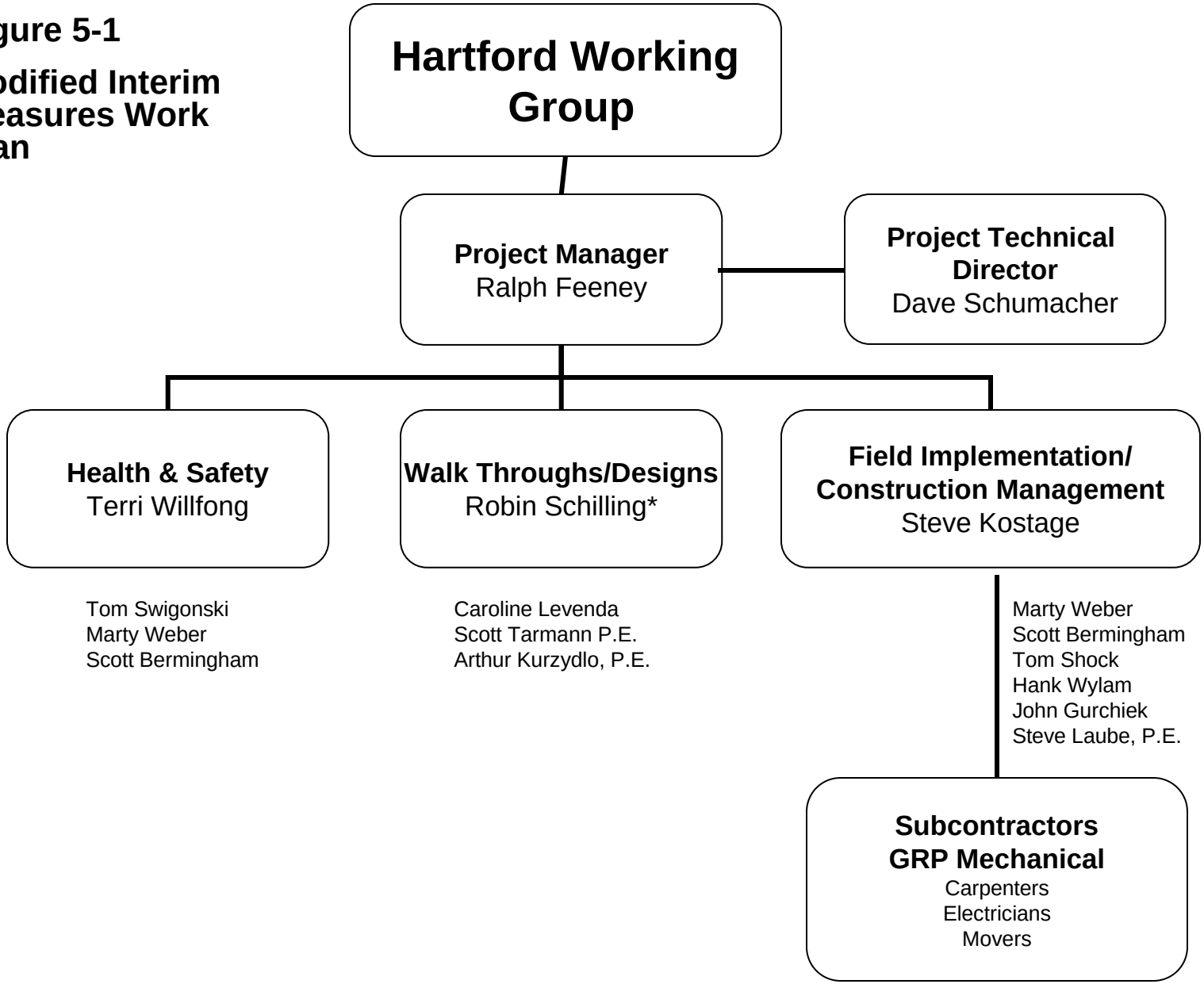


Figure 5-1

Modified Interim Measures Work Plan



6-25-04

ID	Task Name	Duration	Start	Finish
1	**Modified Interim Measures Work Plan**	**36 days**	**Tue 6/1/04**	**Tue 7/6/04**
2	Prepare Modified IMWP	11 days	Tue 6/1/04	Fri 6/11/04
3	HWG Review	14 days	Sat 6/12/04	Fri 6/25/04
4	Submit to Agency	0 days	Fri 6/25/04	Fri 6/25/04
5	Agency Review	11 days	Sat 6/26/04	Tue 7/6/04
6	Agency Approval	0 days	Tue 7/6/04	Tue 7/6/04
7	**Agency Availability Session**	**0 days**	**Wed 7/7/04**	**Wed 7/7/04**
8	**Send Offer Letters to Residents/Attorneys**	**21 days**	**Tue 6/1/04**	**Mon 6/21/04**
9	Residents from Initial Nas	7 days	Tue 6/1/04	Mon 6/7/04
10	Other Unrepresented Residents	7 days	Tue 6/8/04	Mon 6/14/04
11	Represented Residents	7 days	Tue 6/15/04	Mon 6/21/04
12	**Schedule Walk Throughs**	**48 days**	**Tue 6/8/04**	**Sun 7/25/04**
13	Scheduling of Walk Throughs	34 days	Tue 6/8/04	Sun 7/11/04
14	Door to Door Followup	14 days	Mon 7/12/04	Sun 7/25/04
15	**Walk Throughs/System Installations**	**143 days**	**Tue 6/1/04**	**Thu 10/21/04**
16	**Contractor Procurement**	**28 days**	**Tue 6/1/04**	**Mon 6/28/04**
17	Evaluation/Selection	14 days	Tue 6/1/04	Mon 6/14/04
18	Contracting	14 days	Tue 6/15/04	Mon 6/28/04
19	Contractor Kick-Off Meeting	0 days	Mon 6/28/04	Mon 6/28/04
20	Mobilize	7 days	Tue 6/29/04	Mon 7/5/04
21	Team 1	16 days	Tue 7/6/04	Wed 7/21/04
22	Team 2	16 days	Tue 7/6/04	Wed 7/21/04
23	Agency Meeting - Lessons Learned	0 days	Thu 7/22/04	Thu 7/22/04
24	Team 1	91 days	Fri 7/23/04	Thu 10/21/04
25	Team 2	91 days	Fri 7/23/04	Thu 10/21/04

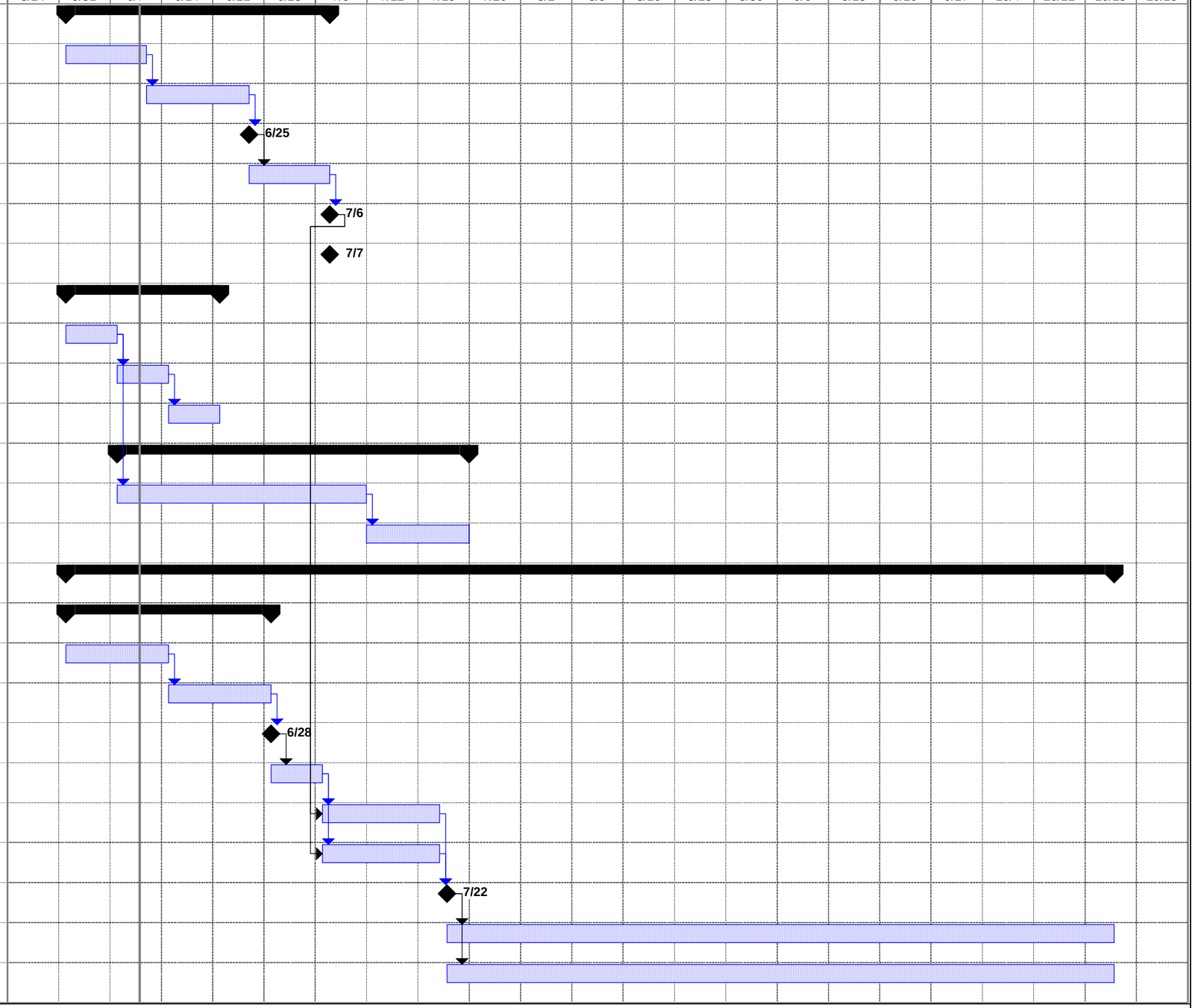


Figure 5-2
Project: Hartford Interim Measures
Date: Fri 6/11/04

Task
Split
Progress
Milestone
Summary
Project Summary
External Tasks
External Milestone
Deadline

APPENDIX A

Example Access Agreement

ACCESS AGREEMENT

This access agreement is entered into between the Hartford Working Group ("The Group") and the Grantor shown below. Grantor is the owner of the following property:

Address: _____

The Grantor named below hereby agrees to grant The Group access to the above referenced Property in order to perform certain environmental activities which the Hartford Working Group will review with Grantor prior to proceeding. Such activities may include sampling, assessment, inspection, monitoring, installation of equipment, operation and maintenance of equipment, and remediation activities (Activities).

The Group shall use reasonable efforts during its Activities to minimize interruption to the business or use of the Property. The Group will repair any property damage that may occur as a result of its Activities at the Property to as close to the condition as existed prior to the damage as is reasonably possible.

Upon request by Grantor, The Group agrees to provide the results of analytical testing performed by The Group regarding Activities. The Group provides this information as a courtesy only. Use of any of the information contained in these documents is at Grantors sole risk.

It is hereby agreed that The Group Access Agreement or Activities on the Property are pursuant to and are being conducted under the terms and conditions of the Administrative Order on Consent issued by the United States Environmental Protection Agency and entered into voluntarily by members of The Group.

Either party to this Access Agreement may revoke it by written notice indicating such revocation. Revocation shall be effective upon receipt, via U. S. Mail, by the other party.

_____	_____
Hartford Working Group	Property Owner Signature (Grantor)
_____	_____
Consultant Contact Person	Printed Name
_____	_____
Phone Number	Date of Authorization
	_____
	Phone Number

APPENDIX B

Walk-Through Assessment Form

WALK THROUGH ASSESSMENT SURVEY

ASSESSORS *(initials)*

(Please include NA for not applicable where necessary)

Date: _____

Time: *(survey time)* _____

Address: _____

Residential Contact: _____

Phone: (Home) _____ **(Work)** _____

Choose one:
Own ☐ **Rent** ☐ **Other** ☐

If Renting/Other:

Landlord Name: _____

Landlord Address: _____

Landlord Phone Number: _____

Has there been odor complaints reported? **Yes** ☐ **No** ☐

Date of Complaints: _____

What type of Odor: _____

Any odor complaints at time of assessment? **Yes** ☐ **No** ☐

What type of Odor: _____

Have indoor air samples been collected from the home? **Yes** ☐ **No** ☐

If so, can we receive the results? **Yes** ☐ **No** ☐

Comments?

_____
_____
_____
_____
_____
_____
_____
_____

BUILDING CONSTRUCTION SECTION

	Single Family	Duplex	Condominium	Townhouse	Other
Type of Structure	☐	☐	☐	☐	☐

Structure Description: _____

No. of Floors: _____

Age of Structure: _____

	Yes	No
Slab on grade? (*If yes, see slab section for additional description)*	☐	☐
Basement? *(If yes, see basement section for additional description)*	☐	☐
Finished ☐ Unfinished ☐		
Crawlspace? *(If yes, see crawlspace section for additional description)*	☐	☐

Under what % of structure:

Approximate square footage of the structure:

General aboveground construction (check all that apply):
Wood ☐ Brick ☐ Concrete ☐ Cement block ☐
Other

Foundation construction (check all that apply):
Concrete slab☐ Fieldstone☐ Concrete block☐ Elevated above ground/grade☐
Other

Integrity of structure (check all that apply):
Good☐ Fair☐ Poor☐
Other

Has the structure been weatherized with any of the following? (check all that apply):
Insulation☐ Storm Windows☐ Energy-Efficient Windows☐
Other

SLAB SECTION

Are there any drains in the slab? Yes ☐ No ☐
If yes, how many?_____
If yes, are there sewer trap(s)?_____

Are there any exposed slab cracks? Yes ☐ No ☐

Describe any other features about slab structure:

BASEMENT SECTION

Does anyone reside in the basement? **Yes** ☐ **No** ☐

If so, how many and/or who?

Basement Description (Provide Field Drawing)

Basement Dimensions:

Has the basement flooded previously? Yes☐ No☐

If so how often? _____

When was the last time? _____

Was there a sheen on the water? Yes ☐ No ☐ Describe:_____

Does the Basement have moisture problems? Yes☐ No☐

Explain

BASEMENT FLOOR

Basement Floor is (check all that apply):

Concrete☐ Dirt☐ Tile☐

Other

Integrity of Basement Floor:

Good☐ Fair☐ Poor☐

Are there cracks in the basement floor? **Yes** ☐ **No** ☐

Describe:_____

Is there exposed soil in the basement floor?

If so, explain:_____

BASEMENT WALLS

Basement Walls are (check all that apply):

Poured concrete☐ Cement Block☐ Stone☐ Wood☐ Brick☐ Other:

Integrity of the Basement Walls:

Good☐ Fair☐ Poor☐

Are there cracks in the basement walls? **Yes** ☐ **No** ☐

Describe:_____

Is there exposed soil in the basement walls?

If so, explain:_____

Is the Basement easily assessable? Yes☐ No☐
Explain

BASEMENT DRAINS, SUMPS, AND OPENINGS

Are there sumps in the Basement? Yes☐ No☐
How many?_____

Are there drains in the Basement? Yes☐ No☐
How many? _____
How many floor drains have sewer traps?_____
Other comments/descriptions:_____
_____

Are there any other types of holes or openings in the Basement? Yes☐ No☐
Explain

Are any of the following used or stored in the basement?

	Yes	No
Paint	☐	☐
Paint stripper/remover	☐	☐
Gasoline	☐	☐
Diesel fuel	☐	☐
Gasoline or Diesel powered equipment	☐	☐
Solvents	☐	☐
Glue	☐	☐
Metal degreaser/cleaner	☐	☐
Drain cleaners	☐	☐
Pesticides	☐	☐
Laundry spot removers	☐	☐
OTHER:	☐	☐

CRAWLSPACE SECTION

Crawlspace Dimensions:

Crawlspace floor type: Concrete☐ Dirt☐ Gravel☐ Other:_____

Crawlspace construction type: Wood ☐ Brick ☐ Concrete ☐ Cement block ☐

Accessibility: Indoor☐ Outdoor☐
Describe entry points:_____
_____

UTILITY SECTION

	YES	NO
Private water well on the property?	☐	☐
Septic system on the property?	☐	☐

Electrical Service Amperage is:
60A ☐ 100A ☐ 200A ☐
Other

Type of heating (check all that apply):
Natural gas ☐ Fuel oil ☐ Electric ☐ Wood ☐ Coal ☐ Other

Heat conveyance system:
Forced hot air☐ Forced hot water☐ Steam☐ Radiant Floor heat☐ Wood stove☐
Coal furnace☐ Fireplace☐ Other

Where is furnace located? *(show on drawing)*_____

Do you have air conditioning? Yes ☐ No ☐

Air conditioning type (check all that apply):
Central air conditioning☐ Window air conditioning unit(s)☐ Other

Water heater type:
Gas☐ Electric☐ Furnace☐ Other

Water heater location: *(show on drawing)*

Outside utility outlet present? Yes ☐ No ☐ If so, where?_____

Where do utilities enter the structure? *(show on drawing)*
North side: _____
East side:_____
South side:_____
West side:_____

Natural Gas Section

Is there a notable natural gas odor in the indoor ambient air of structure? Yes ☐ No ☐
If so, where?_____

If not, using air monitoring equipment, has there been a detection of natural gas near any joints, valves, thermostats or lines connected to the furnace, boiler or water heater?
Yes ☐ No ☐
Comment:_____

If so, has the resident been notified of the natural gas odor and detection? Yes ☐ No ☐

Will an additional walk through assessment need to be conducted once the natural gas line has been fixed? Yes ☐ No☐

EXTERIOR DESCRIPTION *(Provide Field Drawing)*

Is there a garage? Yes ☐ No ☐
Attached☐ Unattached☐

Is there a storage shed or other building unit on property? Yes ☐ No ☐
Attached☐ Unattached☐
Describe:_____

HOUSEHOLD ITEMS
Sources of Chemical Contaminants

Potential VOC Source	Item Present In Structure? (Yes or No)	Source Location	Removed 48 hours prior to sampling (Yes/No/NA)
Paints or paint thinners			
Gas-powered equipment			
Gasoline storage cans			
Cleaning solvents			
Air fresheners			
Oven cleaners			
Carpet/upholstery cleaners			
Hairspray			
Nail polish/remover			
Bathroom cleaner			
Appliance cleaner			
Furniture/floor polish			
Moth balls			
Fuel Tank			
Wood stove			
Fireplace			
Perfume/cologne			
Hobby supplies (e.g., solvents, paints, lacquers, glues, photographic dark room chemicals)			
Scented trees, wreaths, potpourri, etc.			
Other			

	Yes	No
Do one or more smokers occupy this structure on a regular basis?	☐	☐
Do the occupants frequently have their clothes dry-cleaned?	☐	☐
Have you recently remodeled or painted?	☐	☐
Are there any pressed wood products in the structure (e.g., hardwood plywood wall paneling, particleboard, fiberboard)?	☐	☐
Are there any new upholstery, drapes, shower curtains, or other textiles in the structure?	☐	☐
Has the structure been treated with any insecticides/pesticides? If so, what chemicals are used and how often are they applied?	☐	☐
Are pesticides/herbicides utilized in the yard or garden? If so, what chemicals are used and how often are they applied?	☐	☐
Is there any stationary emission source in the vicinity of the structure? If yes, describe:_____	☐	☐
Are there any mobile emission sources (e.g., highway; bus stop; high-traffic area) in the vicinity of the structure? If yes, describe:_____ _____	☐	☐

RESIDENT INFORMATION

Resident Contact:_____

When can we reach you? Day:_____ **Evening:**_____

List of Occupants:

Name	Occupation	Under 18?	Sex	Length of time at residence

PHOTO LOG
Photo Documentation:
(Identify, measure, and photograph cracks)

Description and Photo ID or number
(*Reminder*: **Interior** – electrical panel, floor drains, floor cracks, wall cracks, sumps, all sides of basement; utility entry points, potential basement access issues)

(*Reminder*: **Exterior** – North, East, West and south sides; utility entry points; landscape within 5 feet of structure; potential site access issues)

Indoor Air Screening Table

Floor	Location	FID/PID	LEL % (where applicable)

INSERT WALK THROUGH INSPECTION PLAN

ENSR INTERNATIONAL

Walk-Through Inspection Worksheet

Residence Information:
Name: _____
Address: _____

Walk-Through Date: _____
Personnel: _____
Needs Assessor: _____
Construction Manager: _____
Agency Oversight Rep.: _____
Subcontractor: _____

N — Draw in Arrow

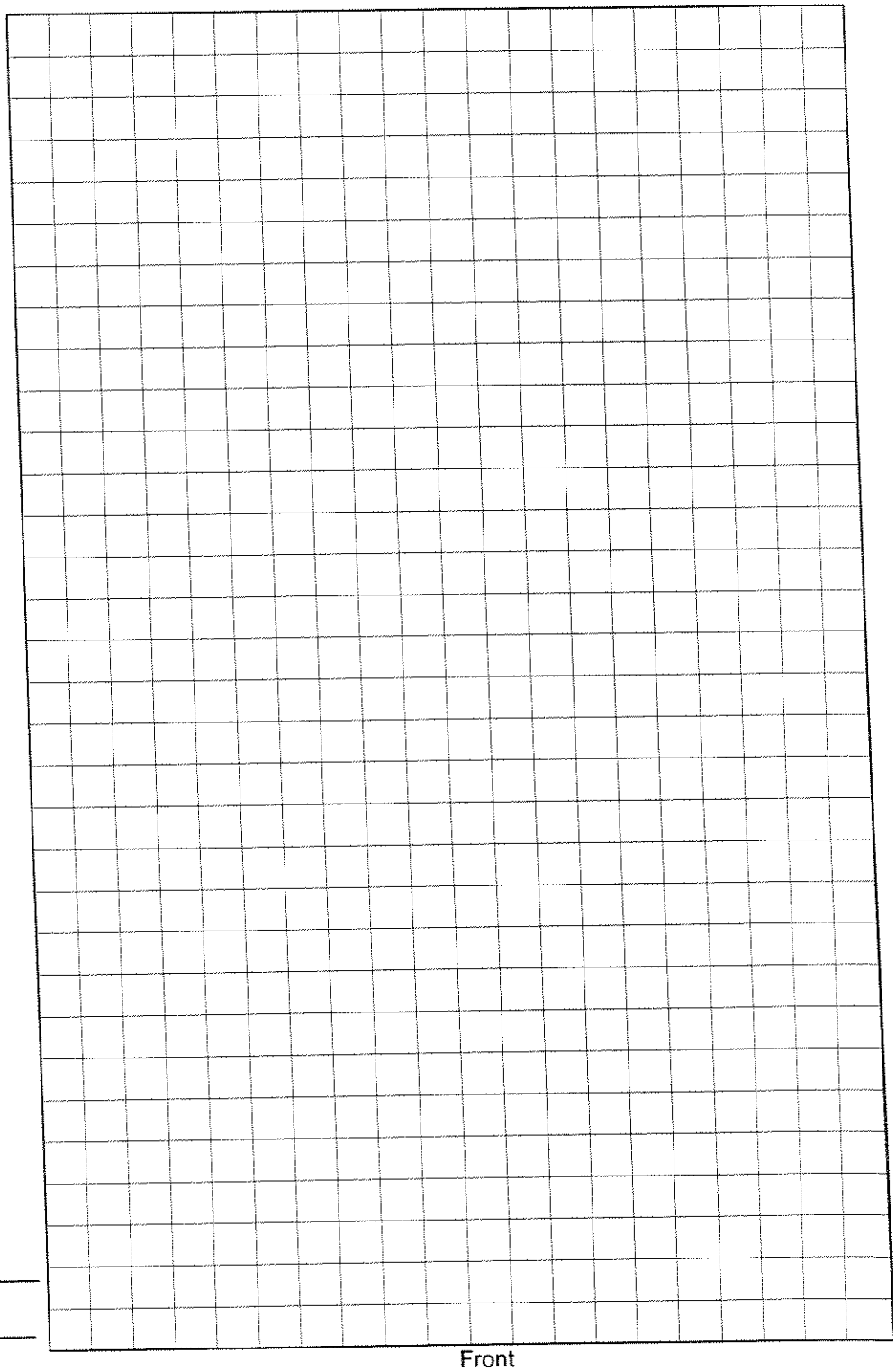
Legend

- HW — Hot Water Heater
- Furnace
- AC — Air Conditioner
- Floor Drain
- Stairs
- Crawl Space
- Size — Window
- Foundation Crack
- Size — Door
- S — Sump Pump
- Column
- Wall Partitition
- Heating/Cooling Register
- E — Electrical Load Center/Fuse Box
- Electrical Outlet
- — W — Water
- — G — Gas
- — E — Electric
- — S — Sewer
- — T — Telephone

BASEMENT FLOOR PLAN

Back

Scale: 1/4" = 2'



Front

Floor Condition:

All Concrete? Yes_____ No_____
(If No, Note Areas of Concrete or Soil)

Basement Wall Construction Type_____
Interior Finished? Yes _____ No _____
If Yes, Type of Finished Wall _____

Drawn By:_____

INSERT CONTRACTOR EVALUATION SECTION

CONTRACTOR EVALUATION SECTION

CONTRACTOR(S): _____

Brief Description and Location of Work: _____

DATE and TIME Work Completed (number of hours): _____

	Yes *(If so, **where and when**? Or any other comments)*	**If yes,** possible procedure for sealing or controlling (list supplies and equipment used)	**No**	**Photo?**
Seal/Plug Floor Drains and/or sump				
Seal Wall Cracks				
Seal Floor Cracks				

Work Completed at Time of Walk - Through

Contractors	Hours	Work Completed

Assessors	

APPENDIX C

Example Operating Instructions

OPERATING INSTRUCTIONS FOR THE EQUIPMENT INSTALLED IN YOUR BASEMENT

The following is a list of instructions for the ventilation system and air monitoring alarm installed by the Hartford Working Group (HWG) in your basement on DATE.

The ventilation system is the exhaust fan/blower installed in a basement window (or other exterior opening) along with a fresh air intake. The purpose of the ventilation system is to vent odors potentially present in your basement.

The air monitoring alarm is the small plastic box with a green light mounted to the basement wall and plugged into an electric outlet. The purpose of the monitoring system is to detect the presence of combustible gases.

The instructions below are only for the operation of the ventilation system and air monitoring alarm. Representatives of the HWG will perform required maintenance of the system and alarm on a semi-annual basis.

VENTILATION SYSTEM:

If you smell odors in your home, please perform the following steps in this order:

1. Open the fresh air intake. This is the window louver or outdoor air opening that does not contain the exhaust fan.
2. Turn on the electrical switch that operates the exhaust fan.
3. Ensure the louvers on both the exhaust fan and the fresh air intake are open and that the fan is operating properly.
4. If there are problems with the operation of either, please contact _____.

IMPORTANT NOTE: The ventilation system is not intended to operate continuously. When you detect an odor in your home, turn on the ventilation system and allow it to operate for a maximum of 2 to 4 hours. If the odor is still present after this time period, please contact _____.

AIR MONITORING ALARM:

1. Do not move the alarm from the location where it was placed.
2. Do not unplug the alarm from the electric outlet.
3. Objects taller than the height of the alarm should not be placed within 3 feet of it.
4. Periodically check the alarm to ensure proper operation. The indicator light should show a green light at all times. This indicates the unit is on and operating properly.
5. If you hear a chirping sound or the indicator light is yellow, this indicates the unit is malfunctioning. Please contact _____ for a replacement.

6. If the alarm buzzer goes off and/or the indicator light is red, please contact the Fire Department by calling 911.

Attached are copies of the manufacturer's instructions for both the ventilation system and the air monitoring alarm. Representatives of the HWG will review these with you.

Please sign below indicating that these instructions and the manufacturer's instructions were provided to you and reviewed with you.

_____ _____

Owner/Occupant 1 Owner/Occupant 2

_____ _____

Owner or Occupant 3 Owner or Occupant 4

_____

HWG Representative

_____

Agency Representative

APPENDIX D

Example Denial Letter

To: Hartford Working Group Date:_____

From: _____
Print Name

_____Hartford, Illinois
Print Address

The Hartford Working Group has made available various measures to limit the potential for underground petroleum vapors/odors entering my home/building. These proposed measures may have included sealing cracks in walls and floors, placing cement in dirt floor areas (if present / as necessary), installing a ventilation system, testing the air quality and placing an air monitoring alarm in my home/building.

I have reviewed the measures made available and have decided not to accept them at this time. If I change my mind at a later date, I will contact the Hartford Working Group to schedule an appointment for representatives to visit my home/building.

_____
Resident Signature

APPENDIX E

Foundation Sealing Materials

T E C H N I C A L D A T A

PSI-901 ONE-PART URETHANE SEALANT

POLYMERIC SYSTEMS, INC.
723 Wheatland Street
Phoenixville, PA 19460-3394
610-935-1170 Fax: 610-935-7123
www.polymericsystems.com

PRODUCT NAME
PSI-901 One-Part Urethane Sealant

MANUFACTURER
Polymeric Systems, Inc.
723 Wheatland Street
Phoenixville, PA 19460-3394
Phone: In USA 800.228.5548
International & Rotary Phones
1.610.935.1170
FAX: 1.610.935.7123
www.polymericsystems.com

PRODUCT DESCRIPTION
PSI-901 is a one-part, non-sag, medium modulus polyurethane sealant specifically developed for sealing dynamically moving joints between materials of dissimilar porosities, coefficients of expansion and surface textures. It cures to a flexible rubber with extraordinary adhesion and cohesion, capable of accommodating joint movement of ±50% of the original joint width. In sharp contrast to other commercial urethane sealants, PSI-901is a polyurethane backbone sealant with a unique curing chemistry, involving atmospheric oxygen. This permits the sealant to cure readily under all climatic conditions independent of relative humidity, making it the sealant of choice in dry climates and during dry winter weather everywhere. PSI-901 contains no isocyanate, presents none of the health and disposal hazards usually associated with materials containing isocyanates, and will not cause bubbles on contact with moisture. This sealant is resistant to mild chemicals and solvents. However, testing is recommended to determine its suitability to a particular application. PSI-901 has good resistance to affects of rain, snow, sleet, ice, sunlight, ultraviolet radiation, atmospheric pollution, etc. This sealant formulation will not "cold slip". Cold slip is the tendency of certain polyurethane sealants to slip out of a joint in mass when the temperature of the sealant is under 40°F when applied and the air temperature is also under 40°F.

PSI-901 exhibits exceptional joint movement capability and will extend ±50% without destroying the seal or adhesive bond.

PSI-901 has excellent adhesion to most common substrates. It bonds to concrete, masonry, ceramics, glass, wood, metal, many plastics, and may be painted.

BASIC USES
PSI-901is ideal for sealing expansion and control joints in precast concrete, tilt-up, poured-in-place concrete, metal curtain walls, perimeter caulking (doors, windows, panels), bedding, steps and risers, and glazing.

BENEFITS
- Non-yellowing
- No bubbling
- Paintable
- No isocyanates
- 0.3 lbs/gal. VOC**

APPLICATION LIMITATIONS
(a) Should not be used for structural or butt glazing nor in joints less than 1/4" in width or depth .

(b) Should not be used on absorptive surfaces such as marble, limestone, or granite without prior testing for discoloration or staining.

(c) PSI-901 needs oxygen to cure. Do not use in confined joints or in areas where odor is objectionable.

(d) Sealant performance could be inhibited by wood cleaning agents, architectural coatings, preservatives or brighteners. Test before applying.

COLOR
White, Gray, Limestone, Bronze, Black and Tan.

PACKAGING
PSI-901 is available in 10.3 fl. oz. (305 ml) cartridges, 24 cartridges per carton. Also available in 2 gallon pails, 5 gallon pails and 55 gallon drums on special order.

APPLICABLE STANDARDS
PSI-901 meets or exceeds the requirements of Federal Specification TT-S-

TECHNICAL DATA: Refer to table below for typical properties.*
*For information only - not for specification purposes.

PERFORMANCE PROPERTIES	RESULTS	TEST METHOD
Tack-Free Time, bulk, hours	3-1/2 ± 1/2	ASTM C 679
Tack-Free Time, cartridges, hours	2 ± 1/2	ASTM C 679
Application Rate, grams/min.		
(1/8" orifice, 30 psi, 75° F)	> 65	TT-S-00230C
Sag/Slump, inches	Nil	ASTM C 639
Cure Through Time, 1/8" bead, days	3	
Adhesion-In-Peel, lb/in		
aluminum, glass & vinyl	25 ± 5	ASTM D 661
Tensile Strength, psi	130 ± 10	ASTM D 412
Ultimate Elongation, %	450 ± 10	ASTM D 412
Hardness, Shore A	25 ± 5	ASTM C 661
Staining	Pass	ASTM C 510
Weight Loss, % (max.)	5	
& Cracking & Chalking after Heat Aging	Pass	ASTM C 792
Durability (Bond & Cohesion)		
on mortar, aluminum, glass		ASTM C 719
Joint Movement, %	±25	
Classification	Type II, Class A	TT-S-00227E
Joint Movement, %	±25	
Classification	Class 25	ASTM C920-87
Service Temperature, cured bead, °F	-80 to 160	PSI S406
VOC Content, lb/gl	0.3	
Specific Gravity	1.6	

**Exceeds current Calif. Air Resources Board requirements.

00230C Type II, Class A; ASTM C920-87 Type S, Grade NS, Class 25, Use NT, G, A, M, and O; AAMA 802.3 and 805.2; Canadian Specification CAN/CGSB 19.13-M87. Meets USDA requirements for use in federally inspected meat and poultry plants.

INSTALLATION

Joint Design: The width of the bead should be a minimum of 4 times the calculated movement. The width or depth of the joint should not be less than 1/4". In joints up to 1/2" wide, the depth of the sealant should be equal to the width. In joints wider than 1/2", the depth should be maintained at 1/2". Maximum joint width for a PSI-901 installation is 1-1/2".

For butt joints, see PSI's Joint Design Chart for recommended joint designs for specific building materials. Lap shear joints should have a width of at least twice the anticipated movement.

Surface Preparation: Joints to receive sealant must be sound, smooth, uniform in dimensions and free from defects and foreign materials. They must also be clean, dry, free of frost and all contaminants, such as curing compounds, sealers (waterproofing), coatings, etc. To test adhesion, apply a sealant bead to each different substrate and allow to cure thoroughly, then pull one end of the bead to test adhesive strength.

Primer: PSI-901 has excellent adhesion to most common substrates such as glass, ceramic, aluminum, steel, PVC, concrete and wood. However, some materials may require priming in order to gain optimum adhesion. PSI-590 Primer is recommended for non-porous surfaces such as plastics. For porous surfaces, PSI's Primer #67, a two-part epoxy primer, is recommended. If a one-part primer is required, PSI-591 is recommended.

Primer should be applied to a clean, dry surface prior to the installation of backer rod, bond breaker tape and sealant. Primer must be kept within the confines of the joint to preclude possible staining.

Back-Up Material: The purpose of back-up material is to regulate the depth of the joint; to provide a surface against which the sealant is compressed when tooled, thus promoting better adhesion to the side walls; and to provide a non-adhering back surface, precluding the possibility of a three-sided joint. Where back-up material is not necessary or where a type is used that does not have release properties, a bond breaker tape should be used.

Closed cell polyethylene foam back-up material is recommended. It should not be punctured, twisted or excessively stretched during installation, nor should it be compressed more than 50% of its original diameter. Open cell backer rod is compatible with all PSI sealants as long as it remains dry.

Tooling: In vertical and horizontal joints tooling is absolutely necessary to aid in adhesion, eliminate air bubbles and give a highly desirable concave appearance.

Cleaning: Immediately remove all excess sealant and smears adjacent to joints with xylol as work progresses. For equipment clean up, use solvent equivalent to xylol or toluol. Consult manufacturer's MSDS for safety precautions when using these solvents.

SHELF LIFE

Twelve months when stored in original, unopened container in a dry area at temperatures below 80º F.

HEALTH PRECAUTIONS

Use only with adequate ventilation. Keep away from heat and flame. Do not take internally. Avoid eye and skin contact. KEEP OUT OF REACH OF CHILDREN. For additional health and safety information, consult a Material Safety Data Sheet.

MAINTENANCE

If the sealant is damaged and the bond is intact, cut out the damaged area and recaulk. No primer is required. If the bond has been affected, remove the old sealant, clean and prepare the joint in accordance with the instructions under "Surface Preparation" and recaulk.

TECHNICAL SERVICES

PSI provides field service, specification assistance, performance data and use evaluations.

Adhesion Testing by PSI: This program is intended to eliminate potential field application problems by pre-testing the adhesion of PSI's construction sealants on samples of building materials submitted by the customer. The tests will aid in determining the proper surface preparation method, effective solvents for cleaning and whether priming is necessary to achieve optimum adhesion. Following this procedure will remove many of the variables that affect field success.

Test samples should be identified as to manufacturer, origin, designed use, building project, person and firm originating the request.

Jobsite Testing of Substrates: A field test can be performed by applying several feet of the sealant to a representative joint and letting it reach full cure. Make a cut in the cured sealant across the joint the entire depth of the sealant. Make two vertical cuts several inches long, paralleling the sides of the joint as closely as possible and extending down from the cross cut. Grasp the free length of sealant and pull at a 90º angle to determine if a good bond has developed. With good adhesion, the sealant will usually tear cohesively or be difficult to remove from the surface.

AVAILABILITY AND COST

PSI sealants are available throughout the United States. Call PSI at 800.CAULK.IT (800.228.5548) or 1.610.935.1170 for your nearest source.

WARRANTY

All recommendations, statements and technical data contained herein are based on tests we believe to be reliable and correct, but accuracy and completeness of said tests are not guaranteed and are not to be construed as a warranty, either expressed or implied. User shall rely on his own information and tests to determine suitability of the product for the intended use, and user assumes all risk and liability resulting from this use of the product.

Manufacturer's sole responsibility shall be to replace that portion of the product of the manufacturer that proves to be defective. Manufacturer shall not be liable to the buyer or any third party for injury, loss or damage directly or indirectly resulting from use of, or inability to use, the product.

Recommendations or statements other than those contained in a written agreement signed by an officer of the manufacturer shall not be binding upon the manufacturer.

MATERIAL SAFETY DATA SHEET

PRODUCT NAME: DRYLOK LATEX BASE MASONRY WATERPROOFER – ALL COLORS
PRODUCT CODE: 651, 652, 655, 657

HMIS CODES: H 1 F 0 R 0 P

SECTION 1 – MANUFACTURER IDENTIFICATON

MANUFACTURE'S NAME: **UNITED GILSONITE LABORATORIES**
ADDRESS: **1396 JEFFERSON AVENUE**
SCRANTON, PA 18509

EMERGENCY PHONE: **(800) 424-9300**
INFORMATION PHONE: **(570) 344-1202**
NAME OF PREPARER: **R. BARAKO**

DATE REVISED: OCTOBER 2001
SUPERSEDES: JUNE 1998

SECTION II – HAZARDOUS INGREDIENTS/SARA III INFORMATION

HAZARDOUS COMPONENTS	CAS NUMBER	OCCUPATIONAL EXPOSURE LIMITS OSHA PEL	ACGIH TLV	OTHER	VAPOR PRESSURE mmHg@TEMP	WEIGHT PERCENT
WATER	7732-18-5	NOT ESTAB	NOT ESTAB	NOT ESTAB	1.0 (68F)	25
*DIETHYLENE GLYCOL MONO-METHYL ETHER	111-77-3	NOT ESTAB	NOT ESTAB	NOT ESTAB	0.1 (68F)	<5
BUTYL BENZYL PHTHALATE	85-68-7	NOT ESTAB	NOT ESTAB	NOT ESTAB	N/A	<5
STYRENE ACRYLIC RESIN	25036-16-2	NOT ESTAB	NOT ESTAB	NOT ESTAB	N/A	10
TITANIUM DIOXIDE	13463-67-7	15 MG/CM	10 MG/CM	NOT ESTAB	N/A	<5
LIMESTONE	1317-65-3	15 MG/CM	10 MG/CM	NOT ESTAB	N/A	20
CRYSTALLINE SILICA	14808-60-7	.1 MG/CM (1)	.1 MG/CM (1)	NOT ESTAB	N/A	25
MICA	12001-26-2	20 MPPCF	3 MG/CM	NOT ESTAB	N/A	5
WOLLASTONITE	13983-17-0	NOT ESTAB	10 MG/CM	NOT ESTAB	N/A	<5
FULLERS EARTH	8031-18-3	5 MG/CM	10 MG/CM	NOT ESTAB	N/A	<5

(1) Time Weighted Average

* Indicates toxic chemical(s) subject to the reporting requirements of Section 313 of Title III and of 40 CFR 372

SECTION III – PHYSICAL/CHEMCIAL CHARACTERISTICS

BOILING RANGE: 212 F
VAPOR DENSITY: HEAVIER THAN AIR
COATING VOC: 1.30 LB/GAL (156 G/L)
SOLUBILITY IN WATER: SOLUBLE
APPEARANCE AND ODOR: WHITE OR COLORS, PRODUCT SPECIFIC. TYPICAL AMINE ODOR

SPECIFIC GRAVITY (H20 =1) 1.5
EVAPORATION RATE: SLOWER THAN ETHER

SECTION IV – FIRE AND EXPLOSION HAZARD DATA

FLASHPOINT: N/A
METHOD USED: N/A
FLAMMABLE LIMITS IN AIR BY VOLUME: **LOWER:** 1.7% **UPPER:** 22.0%
EXTINGUISHING MEDIA: NONE KNOWN
SPECIAL FIRE FIGHTING PROCEDURES: CONTAINERS MAY SWELL AND BURST DURING A FIRE DUE TO INTERNAL PRESSURE CAUSED BY HEAT. THIS MAY CAUSE A SLIPPERY CONDITION ON FLOORS
UNUSUAL FIRE AND EXPLOSION HAZARDS: N/A

SECTION V – REACTIVITY DATA

STABILITY: PRODUCT IS STABLE

CONDITIONS TO AVOID: TEMPERATURES BELOW 32 (F) FOR STORAGE. TEMPERATURES BELOW 50 (F) FOR APPLICATION

INCOMPATIBILITY (MATERIALS TO AVOID): N/A

HAZARDOUS DECOMPOSITION OR BYPRODUCTS: N/A

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

SECTION VI – HEALTH HAZARD DATA

INHALATION HEALTH RISKS AND SYMPTOMS OF EXPOSURE: IN IT'S WET STATE, THIS PRODUCT SHOULD NOT POSE ANY THREAT TO HEALTH DUE TO OVEREXPOSURE

SKIN AND EYE CONTACT HEALTH RISKS AND SYMPTOMS OF EXPOSURE: DIRECT CONTACT MAY CAUSE BURNING, TEARING, REDNESS AND SWELLING

SKIN ABSORPTION HEALTH RISKS AND SYMPTOMS OF EXPOSURE: CAN CAUSE SLIGHT IRRITATION

INGESTION HEALTH RISKS AND SYMPTOMS OF EXPOSURE: MAY PRODUCE SIGNS OF INTOXICATION CHARACTERIZED BY INCOORDINATION, DIZZINESS, HEADACHE, NAUSEA, MENTAL CONFUSION, SLURRED SPEECH DEPENDING ON THE QUANTITY OF MATERIAL INGESTED

HEALTH HAZARDS (ACUTE AND CHRONIC): NONE KNOWN

CARCINOGENICITY: NTP? YES IARC MONOGRAPHS? YES OSHA REGULATED? NO
IARC CONCLUDES THAT THERE IS SUFFICIENT EVIDENCE IN HUMANS AND EXPERIMENTAL ANIMALS FOR THE CARCINOGENICITY OF CRYSTALLINE SILICA IN THE FORMS OF QUARTZ OR CRISTOBALITE. IARC (GROUP 1) SEE SECTION II

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: INHALATION OF THE DUST FROM SANDING THE DRY FILM CAN AGGRAVATE RESPIRATORY CONDITIONS

EMERGENCY AND FIRST AID PROCEDURES:
EYES: FLUSH WITH LARGE AMOUNTS OF WATER FOR AT LEAST 15 MINUTES. CONSULT A PHYSICIAN IF IRRITATION PERSISTS
SKIN: WASH AFFECTED AREA WITH SOAP AND WATER. CONSULT A PHYSICIAN IF IRRITATION PERSISTS
INGESTION: GIVE ONE OR TWO GLASSES OF WATER. IF INDIVIDUAL IS DROWSY OR UNCONSCIOUS DO NOT GIVE ANYTHING BY MOUTH. CONSULT A PHYSICIAN, MEDICAL FACILITY OR POISON CONTROL CENTER FOR ADVISE ABOUT WHETHER TO INDUCE VOMITING
INHALATION: REMOVE VICTIM TO FRESH AIR

SECTION VII – PRECAUTIONS FOR SAFE HANDLING AND USE

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: DIKE AREA AROUND SPILL. APPLY ABSORBENT MATERIAL, THEN SWEEP UP AND PLACE IN PROPER CONTAINERS

WASTE DISPOSAL METHOD: DISPOSE OF IN APPROVED SITES ACCORDING TO LOCAL, STATE AND FEDERAL REGULATIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: AVOID BREATHING DUST. KEEP FROM FREEZING. STORE MATERIAL IN AREAS WHERE TEMPERATURES RANGE FROM 50 (F) TO 90 (F)

OTHER PRECAUTIONS: N/A

SECTIONS VIII – CONTROL MEASURES

RESPIRATORY PROTECTION: WHEN SANDING DRY FILM, USE NIOSH APPROVED RESPIRATOR WITH SOLID PARTICULATE CARTRIDGES

VENTILATION: USE ADEQUATE VENTILATION IN VOLUME AND PATTERN TO MAINTAIN EXPOSURE LEVELS BELOW THAT LISTED IN SECTION II

PROTECTIVE GLOVES: USE NEOPRENE RUBBER GLOVES TO PREVENT SKIN CONTACT

EYE PROTECTION: USE CHEMICAL SPLASH GOGGLES WITH SIDE SHIELDS

OTHER PROTECTIVE CLOTHING OR EQUIPMENT: N/A

WORK / HYGIENIC PRACTICES: WASH HANDS BEFORE EATING, SMOKING OR USING WASH ROOM. WASH CONTAMINATED CLOTHING BEFORE REUSE

SECTION IX – DISCLAIMER

This information is furnished without warranty, representation, inducement or license of any kind, except that it is accurate to the best of UGL's knowledge, or obtained from sources believed by UGL to be accurate, and UGL does not assume any legal responsibility for use or reliance upon same. Before using any product, read the label.

MATERIAL SAFETY DATA SHEET

MSDS Name: PSI-901/RC1 ONE-PART
MSDS Number: 600901125
Version Number 2
MSDS Date: 10/24/97
Page Number: 1

SECTION I - PRODUCT AND COMPANY INFORMATION

Product Name:	PSI-901/RC1 ONE-PART
CAS Number	Mixture
Hazard Rating:	**Health: 1 Fire: 1 Reactivity: 0 PPI: B**
Company Identification:	POLYMERIC SYSTEMS, INC. 723 WHEATLAND STREET PHOENIXVILLE PA 19460
Contact:	I. David Crossan
Telephone/Fax:	(610) 935-1170 (610) 935-7123
Emergency Phone (24 Hour):	(800) 424-9300 (610) 935-1170
Chemtrec (24 Hour):	(800) 424-9300
Preparer	I. David Crossan Technical Director
Trade Name	PSI-901/RC1 ONE-PART
Shipping Name	Caulker's Compound

SECTION II - INGREDIENT AND HAZARD INFORMATION

Hazardous Ingredients	CAS Number	%	TSCA	Health	Fire	React	P
Butyl Acetate	123-86-4	1 - 5	Y	2	3	0	H

*** ALL Ingredients in this product are listed in the T.S.C.A. Inventory

Butyl Acetate is a volatile by-product.

SECTION III - PHYSICAL DATA

Form:	Paste
Appearance/Color:	Gray
Odor:	Sulfur, Mercaptan
Solubility (in water):	Insoluble in Water
Vapor Density:	Heavier than air
% Volatile	2.1%
VOC	0.3 lb/gl
Specific Gravity	1.6

NOTE:

The physical data represented above are typical values and should not be construed as a specification. For additional physical data and details on use, please obtain a data sheet for this product.

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

Flammability Class	IC
Flash Range:	72.°F (22.22°C)

	Tag Closed Cup
Explosive Range:	1.4%
	7.5%

EXTINGUISHING MEDIA:
Foam, CO2, Dry Chemicals, Sand
SPECIAL PROCEDURES:
Use self-contained breathing apparatus and protective clothing.
UNUSUAL HAZARDS:
None

SECTION V - HEALTH HAZARD DATA

Lethal Dose Information (mg/kg)		Oral	Skin	Inhale	LC5
Butyl Acetate					
	RAT	14130.00	1000.00	N/est	1800.00

PERMISSIBLE EXPOSURE LEVEL:
Butyl Acetate is a volitile by-product. Please observe the exposure guidelines for Butyl Acetate.
EFFECTS OF OVEREXPOSURE:
Inhalation: Slight nose, throat, and respiratory irritation possible.
Ingestion: May cause irritation of intestinal tract.
Skin contact: Possible irritation.
Eye Contact: Possible irritation.
FIRST AID:
Inhalation: Remove to fresh air.
Ingestion: Obtain immediate medical attention. Do not induce vomiting.
Skin Contact: wash thoroughly with soap and water.
Eye Contact: Flush with water for at least 15 minutes. Obtain immediate medical attention.

SECTION VI - STABILITY AND REACTIVITY DATA

Stability:	This product is stable
Hazardous Polymerization:	Hazardous polymerization will not occur

INCOMPATIBILITY
Materials to Avoid: Strong oxidizing agents.
CONDITIONS TO AVOID:
Open flame, extreme heat
HAZARDOUS DECOMPOSITION PRODUCTS:
By fire: CO2, CO, NO2, SO2

SECTION VII - SPILL AND LEAK PROCEDURES

STEPS TO BE TAKEN:
Spills or Leaks: Remove with absorbent material or let cure and remove.
WASTE DISPOSAL METHOD:

Dispose of in accordance with local, state and federal regulations regarding environmental control.

SECTION VIII - EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Limits

	ACGIH TLV	ACGIH TLV-C	ACGIH STEL	OSHA STEL	OSHA PEL
Butyl Acetate	150.00 PPM	N/est	200.00 PPM	200.00 PPM	150.00 PPM

PROTECTIVE EQUIPMENT TYPES:

Eyes: Safety glasses or chemical goggles

Respiratory: None required.

Gloves: Appropriate impervious gloves. Because a variety of protective gloves are available, consult glove manufacturer to determine the proper type for a specific operation.

Other: None required.

VENTILATION:

General Mechanical: None required

Local Exhaust: Recommended

NOTE:

Strong offensive odor. Should not be used in poorly ventilated areas.

SECTION IX - HANDLING AND STORAGE

HANDLING:

Not regulated

Storage Temperature: 50 - 80 F (10 - 27 C)

Storage Conditions: Store in a cool, dry, well ventilated area.

Transfer: No special precautions are needed. Follow good manufacturing and handling practices.

Personal Hygiene: Wash thoroughly after handling, especially before eating, drinking, smoking, and using restroom facilities. Wash contaminated goggles, faceshield, and gloves. Professionally launder contaminated clothing before re-use.

Empty container precautions: Attention! This container can be hazardous when empty. Follow label cautions even after the container is empty since empty containers could retain product residues. Do not re-use empty containers for food, clothing, or products for human or animal consumption, or where skin contact can ocurr.

SECTION X - REGULATORY INFORMATION

Right-to-Know:

The non-hazardous ingredients in this product subject to the

MATERIAL SAFETY DATA SHEET

Pennsylvania, New Jersey, and/or Massachusetts Right-To-Know laws are:

CAS	Name
Trade Secret	Polyurethane Resin
13176503	Calcium Carbonate
26761-40-0	Diisodecyl Pthalate
Trade Secret	Hydrogenated Castor Wax

NOTE:

USERS RESPONSIBILITY: A bulletin such as this cannot be expected to cover all possible individual situations. As the user has the responsibility to provide a safe workplace, all aspects of an individual operation should be examined to determine if, or where, precautions - in addition to those described herein - are required. Any health hazard and safety information herein should be passed on to your customers or employees as the case may be.

DISCLAMER OF LIABILITY: The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by the use of this material. All chemicals may present unknown health hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards which exist. Final determination of suitability of the chemical is the sole responsibility of the user. No representaion or warranties, either expressed or implied, of merchantability, fitness for a particular purpose or any other nature are made hereunder with respect to the information refers. It is the responsibility of the user to comply with all applicable federal, state and local laws and regulations.

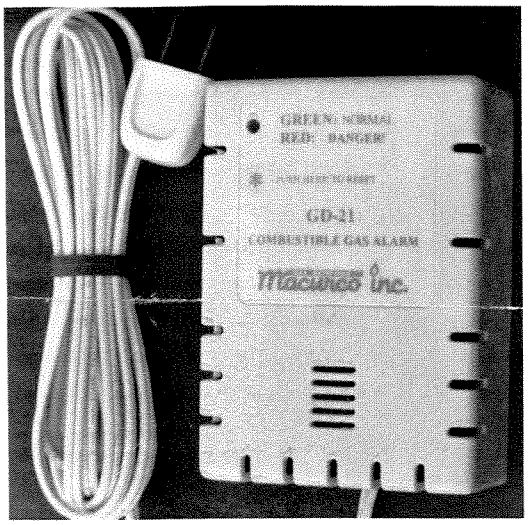
APPENDIX F

Combustible Gas Alarms

GAS DETECTION Macurco inc.

Combustible Gas Alarm

residential landfill buildings commercial



GD-21

- 120 VOLT PLUG IN UNIT
- ATTRACTIVE CASE
- LOUD BUZZER ALARM
- GAS DETECTION IS FIRE PREVENTION

- **Detects many combustible gases**: Natural, LP, Propane, Butane, Gasoline Fumes.
- Standard Calibration setting is **25% of LEL** (Lower Explosive Limit) for natural gas.
- **Loud Buzzer** (similar to a smoke alarm buzzer) wakes even heavy sleepers.
- Stand alone unit. **Plug into any 120 VAC power outlet.**
- **Ignition protected** (explosion proof design).
- **Maintenance free** electronic sensor, supervised.
- Small, compact, attractive **white case**.
- **Easy to install**: Just hang on a screw or nail and plug in.
- **Special calibrations available.**
- **GAS DETECTION IS FIRE PREVENTION**

SPECIFICATIONS:

POWER: 120 VAC, 60 Hz
CURRENT: Less than 10 watts
SHIPPING WEIGHT: 1 pound
COLOR: White
ALARM SOUND: 88 db at 10 feet
ALARM SET POINT: 25% of LEL natural gas
SENSOR MAINTENANCE: not needed
SENSOR LIFE: 7 to 10 years
LIMITED WARRANTY: one year
SIZE: 4 1/2 X 3 1/4 X 1 5/8 inch

DETECTOR LOCATION

WHERE: Gas detectors should be placed near the source of the potential leak, namely near a gas appliance such as furnace, water heater, or gas log fireplace. Because of various odors and gases given off in cooking, place a unit near but not in the kitchen.
HEIGHT: For natural gas, which is lighter than air, place the unit about 1 foot from the ceiling. For propane or other gases heavier than air, place the unit about 1 foot from the floor.

Manufacturer:

GAS DETECTION Macurco inc.
3946 S. Mariposa Street
Englewood, Colorado 80110
303-781-4062 Fax: 303-761-6640
www.macurco.com

Distributed by:

MACURCO GAS DETECTORS

WWW.MACURCO.COM

GD-21

INSTALLATION & OPERATING INSTRUCTIONS

GENERAL INFORMATION

The GD-21 is a 120VAC plug in type unit, with a self-contained alarm. The standard calibration is to 25% of LEL (Lower Explosive Level) of a mixture of Methane (natural gas) and air. The GD-21 will alarm at about 25% of LEL of Propane, Butane and LP Gas. To detect the complete list of gases on the data sheet will normally require a special calibration, for a nominal charge. However, the following gases can be detected with the standard calibration: Acetylene, Gasoline fumes and Lacquer thinners. See the GD-21 data sheet for a list of other gases that can be detected, and other technical information.

LOCATION

The unit on average can cover about 900 sq. ft. The coverage depends on air movement in the room or facility. Locate the unit high if the gas of concern is lighter than air, such as natural gas (methane). If the gas of concern is heavier than air; such as butane, propane, alcohols or gasoline; mount the detector relatively low. Extra detectors may be needed near any areas were people work or the air is stagnant.

The location selected should not be near a corner, as this can be dead air space. The location selected must also have a 120 VAC power outlet within nine feet. It is not suggested to locate gas detectors in kitchens or bathrooms, because of frequent unwanted alarms due to the normal use in those rooms of products containing combustible gases.

INSTALLATION

At the desired location, start a #6 or #8 wood screw of adequate length. Turn the screw into the wall until only 1/4 inch of the screw protrudes. Note the keyhole shaped mounting pattern on the back of the detector. Slip the larger part of this mounting pattern over the mounting screw head and allow the GD-21 to settle over the screw. Insert the plug into a 120 VAC outlet.

OPERATION

When power is first applied to the detector, it will go through a warm-up period of about two minutes. The unit has an internal delay that prevents alarms during the warm-up period. The green light will blink on and off during the two-minute delay period, and will glow brightly, continuously afterwards. The ***PUSH HERE TO RESET*** button resets the 2 minute delay. Once the unit is fully operational (the green light on continuously) test the unit by directing gas from an *unlighted* butane cigarette lighter into the detector near the slot closest to the word ALARM on the decal. The buzzer will alarm loudly and the light should turn red. The GD-21 will shut off the buzzer and turn the light green automatically once the air clears. However, the ***PUSH HERE TO RESET*** button may be pushed to reset the two minute delay and silence the buzzer while the air clears.

The unit has a trouble signal to indicate problems in the gas-sensing element. This is a chirping sound, along with the light changing to a yellow color, to indicate your detector is inoperable. Return the unit to the factory for service. The detector should be tested regularly, about every 6 months, by using gas from an *unlighted* cigarette lighter, as detailed above.

ALARM ACTIONS

Various fumes and gases from normal household products such as aerosol spray cans and cleaning agents can cause the GD-21 to alarm. Strong cooking odors may cause the GD-21 to alarm. The data sheet has a list of the gases that can cause alarms. If such an alarm occurs, push the *PUSH HERE TO RESET* button on the detector, which will silence the alarm for two minutes, while allowing the air to clear.

All of the above mentioned unwanted alarms are related to normal day time activities in a home, and should be of no concern if they can be easily traced to by-products of normal activities. **HOWEVER, DURING THE NIGHT WHEN THERE IS NOT NORMAL ACTIVITY TO PRODUCE FUMES, ALL ALARMS BY THE GD-21 MUST BE TREATED AS POTENTIAL EMERGENCIES.**

SENSOR POISONS

The gas sensing tip in the detector is designed with extreme sensitivity to the environment. As a result, the sensing function of the tip may be deteriorated if it is exposed to a direct spray from aerosols such as paints, silicone vapors, etc., or to a high density of corrosive gases (such as hydrogen sulfide, sulfur dioxide) for an extended period of time.

SERVICING OF UNIT

The GD-21 does not require regular maintenance. The unit uses a self-purging semi-conductor sensor that has a 7-10 year life expectancy. All maintenance and repair of products manufactured by Macurco are to be performed at the Macurco manufacturing facility. Macurco does not sanction any third-party repair facilities.

LIMITED WARRANTY

The GD-21 gas detectors are warranted to be free from defective material and workmanship for a period of one (1) year from the date of installation. If any component becomes defective during the warranty period, it will be replaced or repaired free of charge, if the unit is returned in accordance with the instructions below. This warranty does not apply to units that have been altered or had repair attempted, or that have been subjected to abuse, accidental or otherwise. The above warranty is in lieu of all other express warranties, obligations or liabilities. THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSE ARE LIMITED TO A PERIOD OF ONE (1) YEAR FROM THE PURCHASE DATE. Macurco shall not be liable for any incidental or consequential damages for breach of this or any other warranty express or implied arising out of or related to the use of said gas detector. Manufacturer or its agents liability shall be limited to replacement or repair as set forth above. Buyer's sole and exclusive remedies are return of the goods and repayment of the price, or repair and replacement of non-conforming goods or parts. (The Uniform Commercial Code applicable in the State of Colorado shall govern.)

RETURN INSTRUCTIONS

Call (303) 781-4062 for a Return Authorization number. Then carefully pack the gas detector with a written description of the nature of the return. Send the unit to the following address:

Macurco
3946 South Mariposa Street
Englewood, Colorado 80110
WWW.MACURCO.COM

REV. 12/01